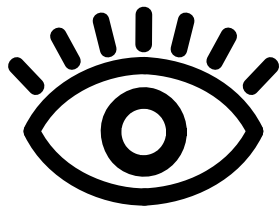


ComMod



Observation manual for collective serious games

William's Daré, Emeline Hassenforder, Anne Dray
For the ComMod group

Observation manual for collective serious games

William's Daré

UPR GREEN, UMR SENS, CIRAD, Univ. Montpellier
williams.dare@cirad.fr

Emeline Hassenforder

UMR G-EAU, IRSTEA/CIRAD, Univ. Montpellier
emeline.hassenforder@cirad.fr

Anne Dray

ForDev, ETH Zurich
anne.dray@usys.ethz.ch

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ComMod/CIRAD 2020

ComMod Association
11 Place Adolphe Chérioux
75015 Paris
France
www.commod.org

CIRAD
Avenue Agropolis
34398 Montpellier Cedex 5
France
www.cirad.fr

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Layout :

Ola Dolinska
ola@yare.fr

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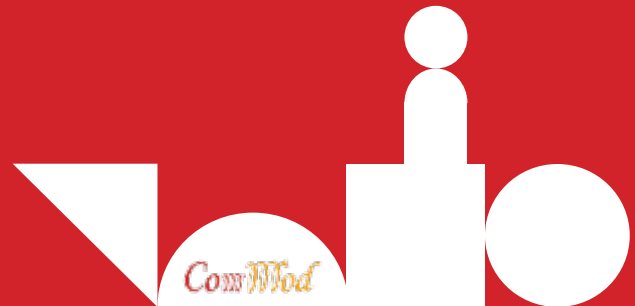


Special thanks

A large part of the ComMod community has contributed to this book, either through specific comments on the document or through discussions and feedback that have contributed to our reflection. We were inspired by many games set up by trainees, PhD students, post-docs, researchers and practitioners.

Many thanks to them!

We especially thank Clémence Moreau, Christophe Le Page and Timothée Fouqueray for their careful rereading, as well as Juliette Cerceau and Eva Perrier for testing a preliminary version of the manual during their game sessions.





Forage Game Session, two forms of observation: manual notetaking in the background and a voice recorder on the table.
Laos, 2018. Photo Céline Dillmann

Preamble

The construction of this manual has been the result of lengthy experience of the *observation*¹ and practice of *serious games* by the members of the *ComMod* group (www.ComMod.org).

The idea of this manual was based on three points:

1. The *observation*, *monitoring* and *evaluation* of serious games is often neglected, due to a lack of time, resources or consideration.
2. When observation protocols are implemented, usually it is for research purposes (for ‘cold’ analysis), but rarely for the ‘hot’ *debriefing* of game sessions.
3. *Observation* of serious games is often seen as a ‘war machine’, i.e. a cumbersome and tiresome device to set up.

This manual is intended to be simple and intuitive in helping to build an observation protocol adapted to the needs of the people implementing and using serious games.

1. Words in italics can be found in the glossary.

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2	Getting values expressed
3	Exploring new individual strategies (stimulating the emergence of new practices)
4	Stimulating the emergence of new organisations and institutions
5	Promoting relationships between players
6	Testing, validating or improving a game

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Mpan' Game, Uganda, AfroMaison project, 2013.
© IRSTEA- COOPLAGE

What serious games are we talking about?

Debates about the definition of a ‘serious game’ have stimulated the scientific community for almost 50 years (see Crookall, 2010). In this manual, we have chosen this simple definition:

An application (computerised or not) that combines serious aspects (teaching, learning, communication, marketing and information) and playful aspects (Alvarez, 2007; Schmoll, 2011).

The ComMod group mainly uses *serious games* in the form of computer simulations and/or role-playing games. These games represent and simulate socio-ecosystem dynamics (e.g. forest, watershed, livestock, fisheries etc.). By being around a game board or in front of a computer, several *players* interact and seek a solution to *system* problems (e.g. deforestation, poverty, water quality etc.) by learning together, coordinating and making collective decisions.



Wat-A-Game, France, SPARE project, 2016. © IRSTEA-COOPLAGE



CapBiomass game, Fontainebleau Biosphere Reserve, CapBioTer project, 2018. Photo William's Daré

CREATION OF
THE GAME
(Modelling)



GAME SESSION
(Simulation)

Just before
game time

Briefing



During
game time

Game rounds

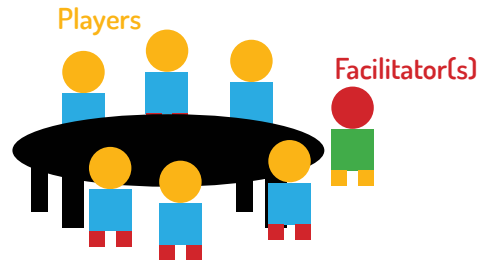


Just after
game time

Debriefing



EFFECTS



In what context should this manual be used?

This manual is about observing *players* and their interactions during a *serious game* session that meets the following five conditions:

1. The session focuses on the use of a game that has already been created that refers more or less abstractly to a given *system*. We deem a *system* to be a real situation that involves interactions between humans and nature (pastoralism in mountain areas, management of agricultural land, management of urban gardens, multi-use management of water etc.).
2. The number of *players* in the classroom is more than one.
3. At least one *facilitator* is present to facilitate interactions between *players*.
4. The course of the session follows the structure: *Briefing* – Game Turns – *Debriefing*.
5. In addition to the playful aspect, the objective of the session is to produce effects in relation to the *system* in question (new knowledge, conflict resolution, change of values, new practices, improvement of biodiversity etc.).

If this is not your case, this manual may not meet your expectations.

The figure opposite illustrates part of a classical *ComMod* process: from the conceptualisation of a model to the analysis of effects. In a complete *ComMod* process, there is the entire upstream part of the collective definition of the question through to the downstream evaluation of the effects, a stage which can lead to the emergence of a new problem leading to a new loop (cf. Methodological Guide, Daré et al. 2009).

Preliminary note on the ethical and legal aspects of data collection

To the extent that the serious games mentioned in this manual involve the participation of physical persons, and that you are going to collect data on these persons, check which legislation and data protection rules your work, the participants and yourself are subject.

This is especially important with regard to:

- The image rights of the participants (if you are filming or photographing)
- The collection and use of personal or socio-demographic data collected

Be clear and transparent with the participants of the gaming session and other people involved.

In particular, be sure to specify the objectives of the observation and analysis of the data collected, the legal basis used, the persons responsible for the analysis, the persons who may have access to the data, the nature of the data collected and their degree of sensitivity, the length of time the data will be kept and the data security measures put in place.

Why observe a serious game session?

The *serious games* we are talking about here are intended to produce effects on the participants in the session: for example, changes in practice or the acquisition of new knowledge. It is therefore necessary to be able to account for these effects through an *observation* protocol.



Observation allows for the collection of data that will be used to:

- Characterise the game session (date, place, number of participants etc.)
- Report on the facilitator's influence on the game and players
- Understand the evolution of players' behaviours and relationships between them
- Enrich and contextualise the debriefing
- Evaluate the effects of participating in the game session (learning, practice, relationships etc.)
- Perform statistical analysis and/or session comparison

What data are we talking about?

These data are of different kinds: **qualitative** (verbal and non-verbal) and **quantitative** (*indicators*).

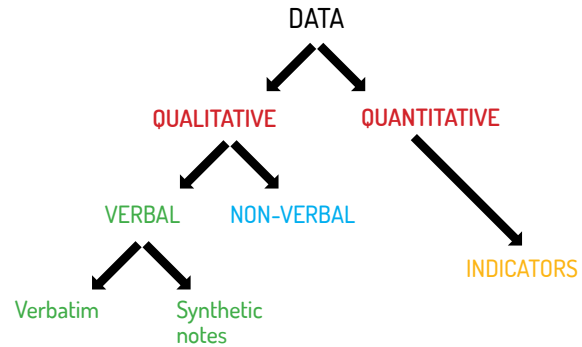
Verbal data are of two kinds:

Verbatim data is a complete reproduction of what the players say.

Example: “*You can’t do this!*”

Synthetic notes are summaries of observed elements.

Example: “*The players decide to create a committee.*”
The entire discussion leading up to the decision to form a committee is not recorded.



Non-verbal data correspond to body language, i.e. physical attitudes, facial expression, gestures, clothing, variation in tone of voice etc.

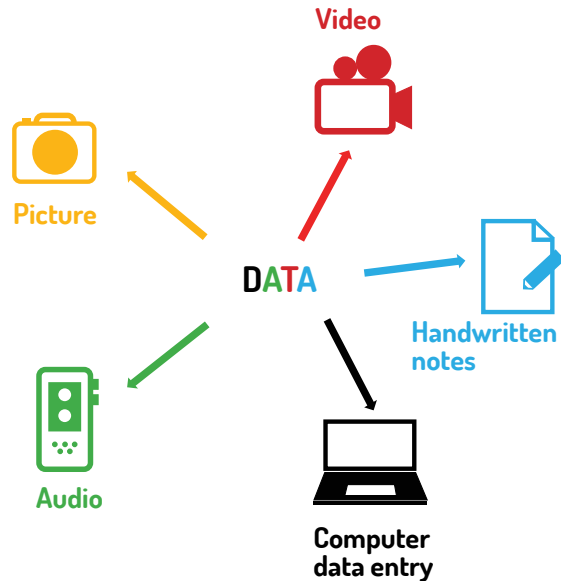
Examples: looking, smiling, yawning, nodding, leaving the room, standing in the centre of the group, pointing, whispering, shouting etc.

Indicators are numbers used to provide information about the value of a quantity. Examples: state of a resource, money obtained by the various players, number of times a word or gesture is used etc.

Later, we will discuss ‘data collection’ which to us is all of the observer’s activities in recording the various elements above.

What equipment should I use to observe?

Different materials can be used to collect data, continuously (video, audio) or discreetly (photos, notes, computer input).



Top photo: Bagrépoly game, Burkina Faso, WLE project V11 2016. Photo Farid Traoré
Bottom photo: Mpan'Game observer, Uganda, AfroMaison 2013 project © IRSTEA-COOPLAGE

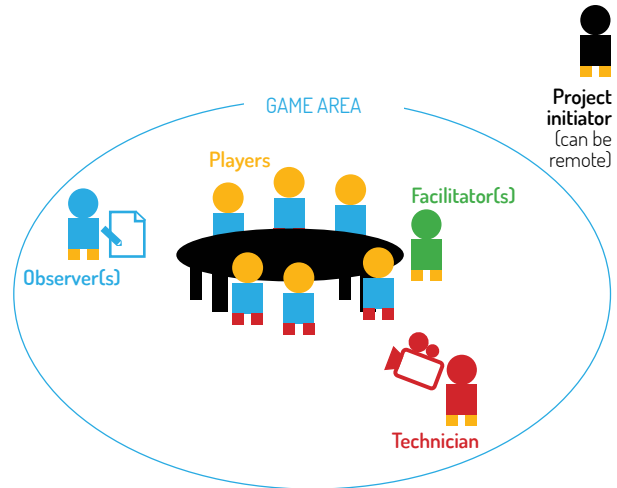
Who is observing?

The game session involves different people in different roles:

- The *facilitator* is the one who hosts the game session, presents the rules of the game, organises the session, encourages dialogue and maintains the playful atmosphere. He/she is the ‘master of the game’.
- The *players* are the participants in the session who are active during the game rounds.
- The *observer* is in charge of collecting data on the game session and provides the elements that are observed to enrich the *debriefing*. Depending on the situation, the *observer* may be asked to facilitate the *debriefing*.
- The *technician* is in charge of the technical recording of the players’ actions (for example, he or she will be the one who manipulates the computer software if necessary and the one who takes photos or videos).

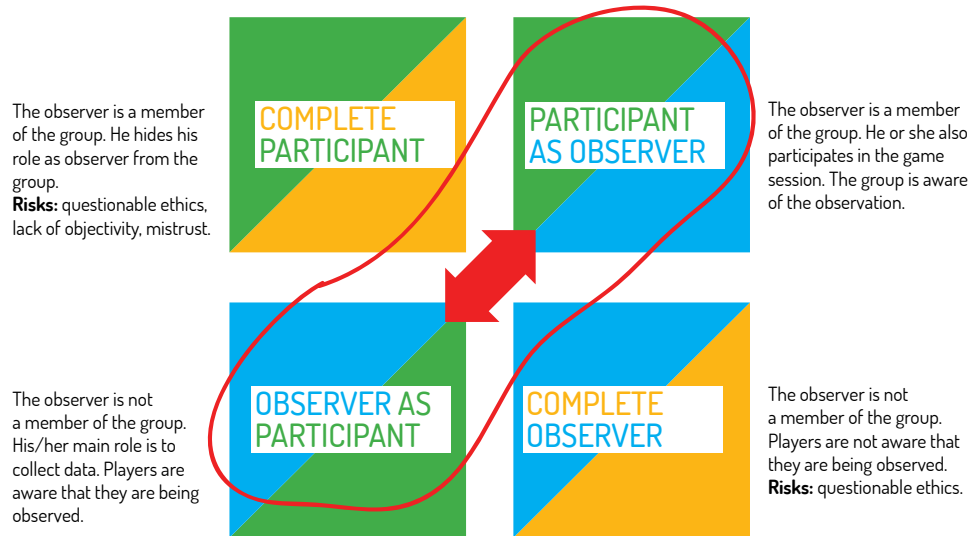
Observation is mainly carried out by the *observer*. However, the *players*, *facilitator(s)* and *technician(s)* may also participate in data collection (see figure on page 32).

Depending on the objective of the session and the human resources available, the roles of *facilitator*, *observer* and *technician* may be carried by the same person.



What posture is appropriate for the observer?

In this manual, we consider that a suitable *posture* is that of *observer-as-participant* or *participant-as-observer*:



(Jankowski, 2012 based on Gold, 1958 and Adler & Adler, 1987)

In both cases, *observers* make their role of *observation* transparent to the other *players*. They participate in the game session either by playing (*participant-as-observer*) or by mobilising the data collected during the *debriefing* (*observer-as-participant*). We consider that this participation is necessary in order to understand the representations and behaviours of the *players*.

When to observe?

The *observation* starts at the beginning of the session (*briefing*) and continues until the participants leave (end of *debriefing*). The nature of the data collected varies according to the time of the game session.



How to build the observation protocol?

We suggest a five-step *observation* protocol:



The more the *observation* protocol is thought about upstream, the greater the capacity to anticipate the observations to be carried out. However, we need to be careful to always remain open to surprises, i.e. unanticipated gaming effects or situations.

Step 1: **Specify the objective(s) of the game session**

Here we are in a context where the game has already been built to meet a global objective.

Nevertheless, each game session may have its own objective. For example, the first session may aim to test or improve the game and the following sessions may aim to encourage players' learning.

Here we have identified six distinct session objectives that are neither exhaustive nor exclusive. These objectives have been identified on the basis of the experiences and work of researchers using role-playing games (Etienne, 2011; Ferrand & Daniell, 2006; COOPLAGE 2020).

1. **Enhancing knowledge transfer and learning**

The objective of the session is for players to acquire new notions, knowledge or concepts. This objective includes educational gaming sessions. It also includes learning about the method itself (i.e. role-playing).

2. **Getting values expressed**

The objective of the session is for players to express their preferences, what they consider right or wrong, just or unjust, sacred, fair etc.

3. **Exploring new individual strategies (stimulating the emergence of new practices)**

The objective of the session is for the players to imagine new ways to implement their activities and/or propose new actions.

4. Stimulating the emergence of new organisations and institutions

The objective of the session is for *players* to discuss new rules (management, resource allocation, sanctions, incentives, laws etc.) and/or propose new collective organisations (e.g. committee, association, network, cooperative, industry etc.)

5. Promoting relationships between players

The goal of the session is for each player to understand the point of view and the constraints of the other *players*, to create new interpersonal relationships and to reduce tensions.

6. Testing, validating or improving a game





The objective of the session is to see if the game is representative of the real dynamics, if the allocation of resources is balanced, if it is fun and interesting for all players etc.

	Objectives of the game session
1	Enhancing knowledge transfer and learning
2	Getting values expressed
3	Exploring new individual strategies (stimulating the emergence of new practices)
4	Stimulating the emergence of new organisations and institutions
5	Promoting relationships between players
6	Testing, validating or improving a game

Step 2: Identify the elements to be observed according to the session's objectives

The following tables guide the *observer* on what to observe according to the session's objective(s) specified above (see p. 22-23). The elements to be observed are classified into three categories: non-verbal, verbal and *indicators*.

For each element to be observed, the *observation tool* that can be used is specified via the following four icons (see also p. 31):

- Game session **observation** sheet; 
- Player **action** tracking sheet; 
- **Indicator** tracking sheet; 
- Follow-up sheet of **positions** taken by participants in the group dynamics. 

When several tools are listed for the same item, the *observer* can choose the tool that seems most suitable.

Objective 1. Promote knowledge transfer and learning

NON-VERBAL elements to be observed

OBS Use of artifacts (board, pawn, board, graphs) by some *players*.
E.g. player drawing a graph to follow the evolution of a resource on his sheet.

OBS **ACT** Change of actions performed by players.
E.g. As a result of information given by the facilitator or a discussion with another player, a player changes the action that he or she originally planned to do.

VERBAL elements to be observed

Sentences expressing:

OBS Knowledge, perceptions (and their evolution).
E.g. *I didn't think it was that difficult to...; I didn't know that my action had such a consequence; I didn't know that the environment reacted in such a way; I understood...*

OBS The comprehension questions asked by the players about the dynamics of the system and the explanations provided to answer them.
E.g. *In which direction does the water flow?*

INDICATORS to be observed

IND Status of one or more resources.

IND Financial status of *players*.

OBS Number of questions asked about the operation of the *system*.

OBS Counting of the qualitative elements expressed in the two previous columns.
E.g. Number of times the verb 'to know' or 'to understand' is expressed.

Objective 2. Getting values expressed (equity, justice, sacred, preferences, good/bad)

NON-VERBAL elements to be observed

OBS Physical signs of approval or disapproval.

E.g. nodding, smiling, grouping of like-minded players, patting on the back etc.

OBS Gestures of reference to the sacred.

E.g. signs of prayer before an action in the game, blowing on the dice before throwing them etc.

OBS Illegal, forbidden, beyond the rules of the game, actions of mutual aid, compassion, set up in the collective interest, or simply surprising from the observer's point of view

VERBAL elements to be observed

OBS Sentences expressing value judgments.

E.g. *I didn't think I was able to cheat, it's fair/unfair, you have no right to do that, I chose from..., it's not respectful of the elders, it's not fair, you're selfish!*

INDICATORS to be observed



IND **OBS** Number of offending players

IND Financial status of players who show an interest in accumulating


IND **OBS** Count of the qualitative elements expressed in the next column, e.g. number of times the word 'just' or 'equity' is expressed, religious references expressed etc.

Objective 3. Exploring new individual strategies (stimulating the emergence of new practices)




NON-VERBAL elements to be observed

  New actions or changes to actions performed by *players*.
E.g. when a player who had planned to play an action to maximise his income opts instead for a pro-environmental action following information given by the facilitator.

VERBAL elements to be observed

 Sentences expressing changes in practices or proposals for new practices.
E.g. *maybe I could do..., I'm going to test..., I've never done this before...*

INDICATORS to be observed

   Number of proposals for new practices made by *players*.

Objective 4. Stimulating the emergence of new organisations and institutions

NON-VERBAL elements to be observed

OBS Lawful or unlawful arrangements reflected in the actions, attitudes, groupings or evictions of players.
E.g. corruption via bribes, signing of an agreement etc.

VERBAL elements to be observed

Sentences expressing:

OBS The spontaneous creation of a collective (group, committee, associations, network, cooperatives etc.)
E.g. *if we shared this, if we got together* etc.

OBS **ACT** Decisions on management rules or resource allocation, management plans, sanctions, incentives, new laws.

OBS The relationships between individuals and the collective to which they belong in the game.
E.g. *players* from one village interacting with another village in conflict because of their neighbourhood on the perimeter.

OBS **POS** Identification of a representative to attend a meeting.

OBS **IND** The exchange of resources among players. **E.g.** loan of money, seeds etc.

INDICATORS to be observed

IND Count of the qualitative elements expressed in neighbouring column.
E.g. number of times a player is proposed as a representative, number of resources exchanged (money etc.), number of sanctions or rewards.

Objective 5. Promoting relationships between players

NON-VERBAL elements to be observed

- OBS** Appearance of signs of empathy.
E.g. lending money to a player in difficulty
- OBS POS** Appearance of new roles in the game or new positions in the group. *E.g.* a leader who decides, a player who gets up to speak in front of the group, a player who moves to get closer to another one, a player who moves backwards in a corner, who gets excluded by the group etc.
- OBS** Formation of groups facilitating exchanges between some (possibly at the expense of other players).
E.g. size, collective, isolation of certain players, formation of a network (distributed, centred on certain players) etc.
- OBS** Positions of individuals in the gaming space reflecting privileged exchanges between some *players*, and the exclusion of others.
- OBS** Use of artifacts (board, pawn, board, graphs) by some *players* to explain something to other *players*.

VERBAL elements to be observed

Sentences expressing group dynamics, power games:

- OBS** Conflicts, tensions, collaboration, cooperation, solidarity, trust.
- OBS** Use of collective pronouns (we, you, they) to express the formation of groups or subgroups and the expression of a sense of belonging or exclusion.
E.g. *here's what we can do* etc.
- OBS POS** Emergence of leader, follower, disrupter, decision-maker, etc.
E.g. *you don't let me* etc.
- OBS** Understanding, interest in others.
E.g. *I understand better why X is reacting this way; why are you saying this?*
- OBS** Opinion on others.
E.g. *I didn't think he was like that, I don't agree with, you wouldn't want to, can someone* etc.

INDICATORS to be observed

- OBS IND** Monitoring of the sharing of speeches (balanced or not): number of speeches and length of time each person speaks.
- OBS IND** Number of *players* in difficulty (who could not perform the desired actions).
- OBS IND** Counting of the qualitative elements expressed in neighbouring column.
E.g. interactions between such and such a player, number of times the pronoun 'we' is used, number of players who have lent money to another player etc.

Objective 6. Testing, validating or improving a game

NON-VERBAL elements to be observed

OBS Signs of interest or disinterest.

E.g. Yawning, signs of trouble; players moving in or out of the playing area; players standing/sitting; active/passive players; smiles/laughs.

VERBAL elements to be observed

OBS Sentences expressing:

- Interest/disinterest
E.g. *I had a good time, I find it interesting, it's the first time I'm taking part in this kind of workshop.*
- Suggestions for improvement
- Blockages or incomprehension
- Membership/rejection
E.g. *it's great what we just did, I never thought of exchanging with such and such a person, it sucks, I didn't learn anything, that's why etc.*
- The link with reality (market dynamics, calibration of resource dynamics).
E.g. *Your price evolution is not realistic! It represents our daily life so well!*
- A request to continue the experiment or on the contrary to stop it.
- A request to invite others.

INDICATORS to be observed

IND Unexpected imbalance of indicators.
E.g. distribution of resources.

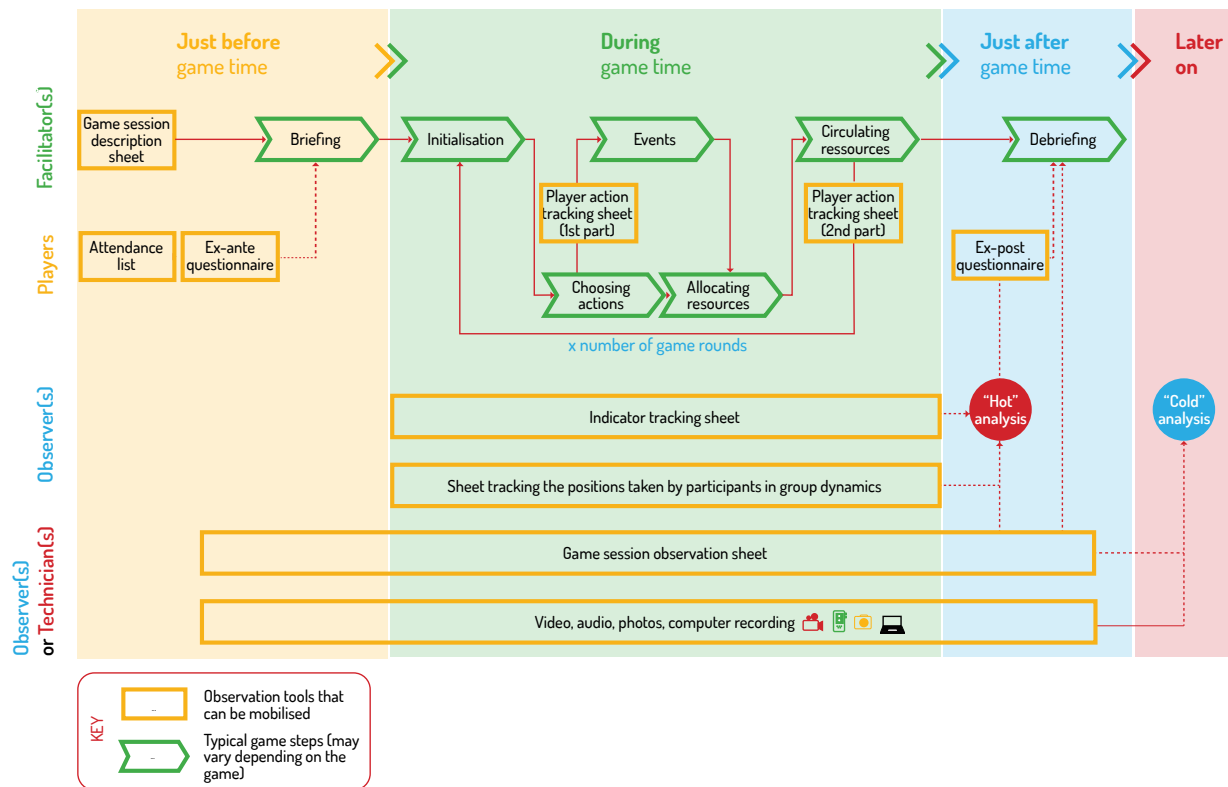
OBS Count of the qualitative elements expressed in neighbouring column (smiles, sentences etc.).

OBS **IND** Number of players in difficulty (who were unable to perform the desired actions).

Step 3 : Create the observation tools

The items to be observed in the tables on pages 25–30 can be recorded using various tools.

Phase	Observation tool	Appendix	Icon
BRIEFING	Game session description sheet	Appendix 1	
	Attendance list	Appendix 2	
	Ex-ante questionnaire	Appendix 7	
GAME ROUNDS	<i>Indicator</i> tracking sheet	Appendix 5	IND
	Sheet tracking the positions taken by participants in the group dynamics	Appendix 6	POS
	<i>Player</i> action tracking sheet	Appendix 4	ACT
DEBRIEFING	Sheet tracking the positions taken by participants in the group dynamics	Appendix 6	POS
	Ex-post questionnaire	Appendix 7	
ENTIRE GAME SESSION	Game session observation sheet	Appendix 3	OBS
	Video, audio, photos, computer recording		




Whatever the objective(s) of your game session, we advise that you systematically complete the following forms:

- Game session description sheet
- Attendance list

For the other tools (sheets or questionnaires), their use and content depend on your objectives.

All of these tools are suggested as indications to help you bear in mind the elements which need to be observed and eventually ensuring that your observation skills become automatic. As your experience grows, you will find that you have more freedom to produce your own tools.

For each of the session's objectives, see the corresponding tables on pages 25–30. In these tables you will find the elements that should be observed. For each item, we have indicated with an icon the tool you can use to observe it. For example, if you see the  icon in front of 'Player action changes', this means that the 'Player action tracking sheet' tool is used to observe these changes. Video, audio and photo recordings allow you to observe all the non-verbal elements.

Game session observation sheet (from briefing to debriefing)

This is the central tool for observing game session. Depending on your *observation* experience, there are several options for completing the session *observation* sheet:

Option 1: Make a box corresponding to each of your objectives and write down the elements to be observed in each box as a reminder (see **OBS** icon in the tables on pages 25–30)

- **Advantage:** The information will then be much easier to mobilise for hot *debriefing*, especially when there is little time between the gaming session and the *debriefing*.
- **Disadvantage:** This can be difficult to do during the session, as it involves having to keep in mind the elements corresponding to each objective.

Option 2: Make three separate boxes for non-verbal, verbal and *indicators* (if relevant).

- Same advantages and disadvantages as Option 1.

Option 3: Take notes ‘on the fly’ on blank paper.

- **Advantage:** Easier to do for the *observer* during the session.
- **Disadvantage:** Requires time between the game session and debriefing to reorganise the notes taken.

These three options require the *observer* to have in mind the different elements to be observed. If your team comprises several *observers*, you can divide up the elements to be observed (for example, verbal for *observer* 1 and non-verbal for *observer* 2).

Player action tracking sheet

This consists of reporting on the actions carried out by each *player* in each round of the game. If you want *players* to comment on their choice of actions, remember to create a comment space for this (see Appendix 4).

You can also ask them for other information if necessary (e.g. “*Why did you change your actions between the two rounds?*”) but be careful not to include too much information, as this work is tedious for the players and can take them out of the fun atmosphere.

Think beforehand about the most appropriate time to fill in the monitoring sheet. This can be done:

- At the beginning of the round, just after each player has chosen the actions he or she wants to perform.
- At the same time the observer fills out the indicator tracking sheet.
- At another time to be defined.

Indicator tracking sheet

Begin by identifying the *indicators* to be observed (see tables on pages 25–30). Be careful not to identify too many *indicators*, as monitoring them may be difficult.

Consider whether or not you want to computerise the *indicator* tracking sheet. Be careful though, just because the sheet is computerised does not mean that you need to put in more *indicators*! Keep an eye on the time required for data entry, even if it is easier to produce summary graphs.

Specify who should fill in this sheet: *facilitator* (especially if there is a computer assistant), observer or *player*. Make sure that the *indicator* tracking sheet is clear and simple enough to be filled in easily.

Think ahead about the most appropriate time to fill in the *indicator* tracking sheet. Usually this is done at the end of a round, but for some games and some *indicators* it may be done:

- **During a round:** for example, for a game on a watershed, to distinguish between the upstream/middle and downstream balance; or if the round is divided into seasons or time periods.
- **After several rounds:** for example, for *indicators* related to reforestation that will only be relevant and visible after longer periods of time; or following particular events (weather, consultation meetings between players etc.)

Follow-up sheet of the positions taken by participants in group dynamics

Regardless of their assigned role in the game, some participants are likely to take on particular positions within the group at some point, and/or change positions during the session.

These positions include, but are not limited to, the following:

- Expert
- Leader
- Opponent
- Idea initiator
- Reformulator
- Information seeker
- Final decision-maker
- Mediator

The tracking sheet allows you to record which participant is in which position at which time.

Step 4 : **Collect data using observation tools**

Now that the *observation* tools have been built, it is time to use them to collect the data you need for your work. Divide the tasks and tools among the different *observers* and *facilitators*.

Before the game session begins, make sure that your *observation* protocol is adapted to the constraints of the workshop organisation:

If you are a small number of observers relative to the number of players

Delegate *observation* to the *players* as much as possible (e.g. by including more items to be observed in the *player* action tracking sheet). You can also focus your observations on certain categories of participants, certain roles or particular moments in the gaming session.

If you have several sub-areas of the game, but a limited number of observers

Choose a sub-space on which to focus your *observation*/writing. However, if equipment is available, you may film, photograph and/or record the other sub-spaces in order to use this data for cold analysis.

If you use the recording technique (audio, camera, video)

Make sure that you have properly charged your equipment and that you have enough recording space on your device.

If you are not sure how to take notes (observation sheet)

You have two options

- *Verbatim*: Take notes of all players' words
- Synthetic note-taking: note down an event, a fact, without necessarily trying to transcribe literally the player's words (e.g. spontaneous creation of a cooperative: what interests us is that this cooperative was created in the game, not necessarily all of the discussion and verbatim records that led to its creation).

The observer alternates between these two types of note taking according to the objectives of the observation. For example, if the objective is to observe the emergence of new organisations, the observer takes a verbatim note as soon as the players discuss the creation of a collective (group, cooperative, internal organisation etc.). The rest of the discussions are taken in the form of synthetic notes.

Wadiga game, France, ComMod Research School, 2015. Photo William's Daré



Step 5 : Mobilise the observed data

In the course of the game

Indicators can be mobilised during game rounds to make *players* react to a given situation.

Remember to facilitate the production of synthetic graphs if necessary and to make the results visible to the *players* concerned.

The *observer* can use his or her *observations* to alert the *facilitator* to certain behaviours in the game (cheating, corruption, self-help etc.) or topics discussed in small groups so that the facilitator can discuss them if he or she wishes.

The *observer* can also alert the *facilitator* if he or she notices that *players* are bored, that some are being left out, or there are other imbalances in the evolution of the game..



Use of synthetic graphs during a session of the Ticoya game in Colombia, 2017. Photo Maria Paola Quiceno Mesa

During the debriefing

What is debriefing?

Debriefing is based on the idea that all group dynamics take place in an alternation between phases in which emotions (positive or negative) dominate and phases in which interactions focus on the accomplishment of the group's tasks.

However, these different phases and their sequence are difficult for group members to perceive. People outside the group of players (such as the facilitator, observer etc.) therefore help the group to better understand why and how this or that result was achieved.

The *debriefing* is when:


1. The *players* share their experience of the game session, sometimes lived individually or in sub-groups, with the rest of the participants.
2. The *facilitator* guides the return to the real situation, encourages the participants to look for new avenues for reflection or solutions.





Debriefing of a Zacavé game session, Haiti, GSE-Avezac project, 2018.
Photo Ola Dolinska


How is the debriefing organised?


Debriefing is generally organised in five phases:

 **Emotions:** Sharing the emotions felt by each participant. This first phase is essential to allow *players* to eventually get rid of negative feelings (resentment, anger, misunderstanding, failure etc.) that could limit their learning and their ability to reflect on the experience.

 **Events:** Sharing of the progress of the entire session among all the *players*: tasks and actions carried out by *players*, game routines, highlights (*curve/indicator* monitoring), changes in pace due to events that occurred in the game etc.

 **Explanations:** The same fact can have several explanations. Here, we need to put them into perspective through the *players*' behaviours and the individual and collective strategies that led to these results.

 **Link to reality:** This involves going back over the links between the game and the real situation at the origin of the organisation of the session (convergences, divergences).

 **Projection into the future:** How the results of the game session will be used in the future.

Each of these phases is conducted by the *facilitator*, who solicits feedback from the *observer(s)* to inform the *players'* opinions. From experience, the events, explanations and link to reality phases are often intrinsically linked in explaining an action situation that has arisen in the course of the game. For example, a *player* will mention: “*I chose to plant wheat on my plot [event] because I didn’t have enough money to plant sunflowers [explanation] and it’s true that in reality that’s what happened to me several years in a row [link to reality].*”

The *facilitator* may choose to organise the *debriefing* by addressing several of these situations one after the other. The *observer* will then provide the observed elements specific to each situation.



Top photo: Preparation for the debriefing between observer and facilitator. Kabamukuni game, Botswana, Prosuli project, 2019. Photo Etienne Delay.

Bottom photo: Player summarising his strategy with other participants. Dai Prek game, Cambodia, ANR Doubt project, 2019. Photo Caroline Coulon.

How to mobilise the data observed during debriefing?

This delicate phase requires organisation.

- Just before the *debriefing*, the *observer* and *facilitator* should take some time to organise the conduct of the *debriefing*.
- The *observer* should share with the *facilitator* the most relevant noted elements that he/she has identified either for each of the five phases (e.g. by highlighting them with different colours on the *observation* sheet, or by putting a letter indicative of the corresponding step next to them), or according to themes (or action situations) that the *facilitator* wishes to address (by listing them clearly).



- The *observer* helps the *facilitator* to conduct the *debriefing* by providing additional elements to go beyond the simple description of the progress made by *players* during the session.
- In principle, *players* are given the floor first. The *observer* then intervenes to enrich the discussion based on his or her *observations*.

Observer shares photos and notes with a facilitator. TerriStories® game, Senegal, 2017. Photo Ola Dolinska

Emotions

Your *observations* make it possible to:

- Report on the atmosphere of the game session. Using your *observation* sheet, you can share the words that reflect the different emotional phases the group went through during the different rounds of the game.
- Put into perspective the individual emotions expressed by each person. This will show, whatever these emotions are, if they were collectively overcome and allowed the group to progress towards solving the tasks.



Kulayinjana game, Zimbabwe, Dream project, 2017. Photo William's Daré

Events Explanations ?

When the *facilitator* introduces the general dynamics of the game session, *players* react to their own actions in the game (based on their action tracking sheet, if necessary), reflecting their understanding of the mechanisms and thereby justifying their choices.

The *observer* intervenes, based on his or her *observation* sheet, to:

- Illustrate what the *players* say.
- Question the knowledge expressed and the different justifications given by the *players* during the game to explain their choice to others.
- Report on non-verbal interactions between *players*: setting up sub-groups, at what time, at whose initiative, to do what etc.
- Clarify the redirections made by the group: for example, by explaining how certain tensions observed between individuals or sub-groups or the introduction of events may have led the group dynamics (new decision, new grouping, etc.) in a particular direction.

You should pay particular attention to highlighting the changes you have perceived in terms of value, preference and justification. Your *observations* should be linked (as much as possible) to the dynamics of the game (by identifying the turn in the game and the possible link to the evolution of *indicators*).



Graphic explanation of game phases
Kulayinjana game,
Zimbabwe, Dream
project, 2017. Photo
William's Daré

Link to reality →•←

Your role here is to report on all the references to reality made by the *players* during the game.

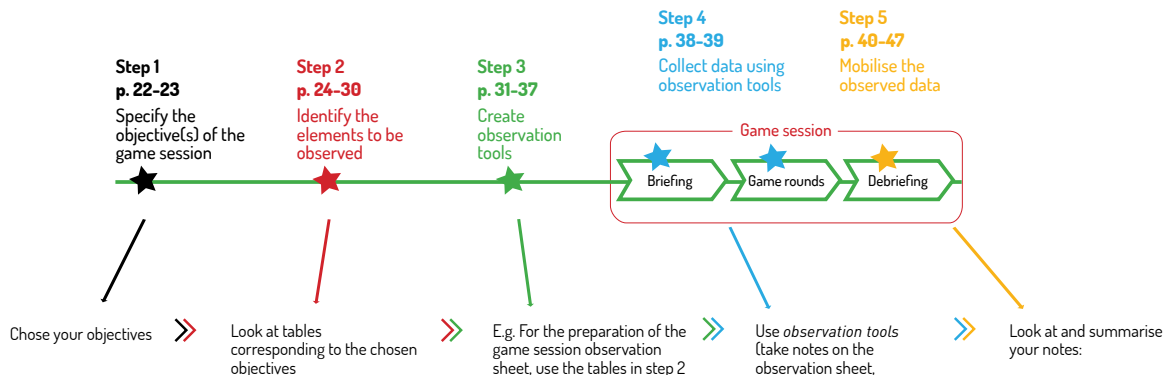
The *observer* intervenes, based on his or her *observation* sheet, to:

- Underline the convergences and divergences that *players* have highlighted between the game and reality. To do this, you should rely mainly on the *players'* *verbatim* statements (“*Normally it doesn't happen like this!*”), in particular by sharing the moments when the terms real, reality, realism, real life etc. were used. You can also go back over the surprises and unexpected events that appeared during the game session because they often reflect elements of reality that were not considered in the design of the game.
- Mention when players justified their actions in the game by a link to reality: “*I did this because in real life...*”.
- Highlight any link to reality made unconsciously or not expressed by the *players*: e.g. if a *player* turns to a neighbour in real life to obtain a loan when the rules of the game led him or her to turn instead to the *player* playing the role of banker.

Projection into the future ↗

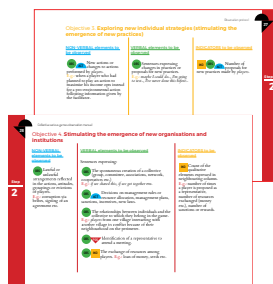
This phase is generally not based on observational data since it is a projection into the future. However, if *players* mentioned during the gaming session elements related to such a projection (e.g. “*Next time I make a decision in my job, I will do it differently*”), it is relevant to mention them.

Overview of the steps to follow

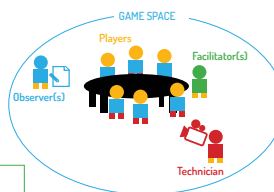


Example

- 5 Exploring new individual strategies (stimulating the emergence of new practices)
- 4 Stimulating the emergence of new organisations and institutions



Sort this list of items to be observed according to the chosen option (see Appendix 3): by objective / by type of data (verbal, non-verbal, indicators) / free note-taking and then transfer this list to the corresponding boxes. This will serve as a memo when taking notes.



During the game to make players react to their situation in the game or alert the facilitator.





During the debriefing to supplement players comments and enrich the discussion with your observations.

For further developments

If you wish to mobilise your observations for a cold/a posteriori analysis



All the data collected through the different tools can be analysed in more detail, for example for research purposes or to report on the effects of your gaming session on your *system*. This is called *cold analysis* and can be of a qualitative, quantitative or mixed nature.

Video, audio and photo recordings and ex-ante/ex-post questionnaires are useful for *cold analysis*. Their time-consuming analysis is difficult to perform between game rounds and *debriefing*.

-  **Viewing the videos** can lead to an analysis of non-verbal elements.
-  **Verbatim transcription** of video or audio recordings can be used for speech analysis.
-  **The analysis of *players'* action follow-up sheets** can be used to establish a grid of the different strategies of the players via statistical processing.
-  **The analysis of ex-post/ex-ante questionnaires** (see Appendix 7) can, for example, provide additional information on players' knowledge and values (for example, by asking them to express their preferences directly in addition to observing how these are expressed in the game through their discourse and behaviour). They can also be used to analyse changes.

The definition of an analysis framework, the use of transcription software and manual transcription/translation can be considered for this. You can consult online courses on textual analysis to help you process the information collected to answer your questions (e.g. OpenClassrooms, CNAM, CIRAD CIHEAM etc.).

Be careful not to drown yourself in recordings!

  Remember to define beforehand how you intend to use recorded data. Think well in advance about the complementarity between the media used: e.g. if you only make audio recordings of group discussions, you won't be able to easily find out who said what afterwards. However, you can do this in addition to video or *observation*. Finally, some players are uncomfortable with being filmed, so ask yourself in advance if you will actually reuse the video for your analysis.



Transcription and translation of the audio and video recordings of game sessions, India, Assam project, 2016. Photo Swen Bos

If you want to observe more than one game session

In this manual we focus on one game session. Of course, if you want to observe a succession of game sessions as part of a longer process, simply repeat the protocol offered here. You can then aggregate the data, make comparisons between different groups, report on changes over time etc.

If you want to observe a participatory workshop (without games)

If you are observing interactions between participants that do not involve a game (e.g. a participatory planning workshop, a participatory model design workshop, a working meeting etc.), you can base your approach on this manual because a number of the elements to be observed (especially non-verbal ones) may be similar. Others, however, may not be relevant.



Observation of a participatory planning workshop on the River Drôme, France, SPARE project, 2016. © IRSTEA-COOPLAGE-SMRD

Glossary

Briefing: The moment just before game time when the facilitator welcomes the participants, introduces the session's objective and organisation, and explains the elements of the game.

Cold analysis: Interpretation of data observed after the end of the game session for research purposes or to report on long-term effects.

ComMod: An association whose main goal is to design, analyse, develop and promote scientific research and its applications in the field of Companion Modelling, including its main methods and tools, namely role-playing, multi-agent modelling, and social simulation (<https://www.commod.org>). ComMod also refers to the Companion Modelling approach.

Debriefing: The moment just after game time when the facilitator speaks with players to get them to comment on the experience they have just lived. This is the moment when you come out of the play phase and return to the real situation that led to the serious game.

Facilitator: Person who leads the gaming session, presents the rules of the game, organises the session, encourages dialogue and maintains the playful atmosphere. He or she is the 'master of the game'.

Game time: The time during which participants discover the components of the game and interact with each other. Game time is usually composed of several rounds of play.

Indicators: Numbers used to provide information about the value of a quantity. E.g. state of a resource, money in the possession of various players etc.

Monitoring and evaluation: A systematic investigation of an object that can be carried out for a variety of purposes, by a variety of stakeholders and at various times (based on Chess, 2000).

Observation: The act of looking closely at phenomena, events and people in order to

study them, understand them, record them, draw conclusions from them etc. (adapted from Dictionnaire Larousse)

Observation tool: Techniques or procedures used to obtain and collect data about the gaming session. E.g. observation sheets, questionnaires, indicator tracking sheets etc.

Observer: A person who is responsible for collecting data on the game session and who provides the observed items to enrich the debriefing. Depending on the situation, the observer may be asked to facilitate the debriefing.

Players: Session participants who are active during the game rounds.

Posture: The moral attitude of the observer as reflected in the emotional, social, philosophical and political position he or she takes in the game space and within the group of players. Their posture influences their way of observing (according to Daré et al., 2011).

Serious game: An application (computerised

or not) that combines serious aspects (teaching, learning, communication, marketing, information) and playful aspects (Alvarez, 2007; Schmoll, 2011).

Synthetic notes: Summaries of observed elements. E.g. *“Players decide to form a committee”*: the entire discussion leading up to the decision to form a committee is not recorded.

System: Real situation involving interactions between people and nature (pastoralism in mountain areas, management of agricultural land, management of urban gardens, multi-use water management etc.).

Technician: Person in charge of the technical recording of players' actions (e.g. he or she will be the one who manipulates the computer software if necessary, the one who takes photos or videos).

Verbatim: Complete reproduction of what the players say (the whole sentence is written without changing it).

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Intense discussions between farmers and buyers
Bagrépoly Game, Burkina Faso, WLE project VII, 2016. Photo Farid Traoré

Appendices

Appendix 1 Game session description sheet

Appendix 2 Attendance list

Appendix 3 Game session observation sheet

Appendix 4 Player action tracking sheet

Appendix 5 Indicator tracking sheet

Appendix 6 Sheet tracking the positions taken by participants in group dynamics

Appendix 7 *Ex-ante/ex-post* questionnaire

Game session description sheet

(To be completed by **the facilitator before the game session**)

Total number of participants:

Location :

Date:

Name of the game/version:

..... women

..... men

..... children

CONCERNING THE GAME SESSION

Objective(s) of the session :

- ☐ Enhancing knowledge transfer and learning
- ☐ Getting values expressed
- ☐ Exploring new individual strategies (stimulate the emergence of new practices)
- ☐ Stimulating the emergence of new organisations and institutions
- ☐ Promoting relationships between players
- ☐ Testing, validating or improving a game

Does the observer(s) speak the language spoken by the participants?

- ☐ Yes (at least one observer) ☐ No

How were participants invited?

- ☐ Broad call for participation (media, press etc.)
- ☐ Individual invitations. Who sent the invitations?
- ☐ Other:

Location of the session:

.....

Is the session taking place:

- ☐ Inside ☐ Outside
- ☐ With one group only ☐ With several groups (multiple games in parallel)

Are participants paid?

- ☐ Yes, how much? By whom? ☐ No

Role within the organising team	First and last name
Facilitator(s)	
Observer(s)	
Translator(s)	
Media (photographer, cameraman etc.)	

ADDITIONAL COMMENTS:

Attendance list

(To be completed by the players before the briefing)

Location:

Date:

Name of the game/version:

[illegible]

Game session observation sheet

(To be completed by the observer during the game session)

Location:

Total number of participants:

Date:

Name of the game/version:

..... women men children

BRIEFING

Start time:

End time:

[Choose the option that suits you best and reproduce the boxes in three parts - briefing / playing time and debriefing - if applicable]

OPTION 1

Non-verbal attitudes and behaviours
Verbatim
Indicators

OPTION 2 :

[Free note-taking]

GAME TIME

Start time:

End time:

Roles	Names of the player(s)

Number of game rounds:

[Reproduce here the boxes according to the option 1 or 2 you have chosen]

DEBRIEFING

Start time:

End time:

Did the session: ☐ Last longer than expected

☐ Start late

How many people arrived or left during the session?

Were there people who stayed in the background (i.e., did not actively participate in the game)?

☐ Yes, how many?

☐ No

[Reproduce here the boxes according to the option 1 or 2 you have chosen]

ADDITIONAL COMMENTS:

Player action tracking sheet

(To be completed by **each player during the game session**)

Location:

Date:

Name of the game/version:

Name and role of the person completing this tracking sheet:

	Actions played and location of each action	Comments (innovative or newly created actions, change of actions following discussions etc.).
Round 1		
Round 2		
Round 3		
Round 4		
...		

Indicator tracking sheet

(To be completed by the observer, the facilitator or players during the game session)

Location:

Date:

Name of the game/version:

Name and role of the person completing this tracking sheet:

	Value of indicator 1	Value of indicator 2	Value of indicator 3	Value of indicator 4	...
Round 1					
Round 2					
Round 3					
Round 4					
...					

Sheet tracking the positions taken by participants in group dynamics

(To be completed by the observer during the game session and the debriefing)

Location:

Date:

Name of the game/version:

Name of the person completing this tracking sheet:

Reminder of possible positions (non-exhaustive list):

- Expert
- Leader
- Contradictor
- Idea launcher
- Reformulator
- Information requester
- Final decision-maker
- Mediator

Game round (D=debriefing)	Participant	Role assigned in the game	Position taken in group dynamics	Why?

Standard questions used by commod process organisers in ex-ante/ex-post questionnaires for evaluating role-playing games

Evaluating the effects of a game session is a recurring ambition. However, ex-ante/ex-post questionnaires are not part of the observation of games (in the strict sense) but rather of their monitoring and evaluation. They are not used 'straight away' to enrich the debriefing because they require prior analysis that takes time. Moreover, the creation of a questionnaire requires specific skills that are beyond the scope of this manual. To train yourself, we suggest you refer to dedicated guides and bibliographical resources (cf. Bachelet, 2012; Dufour, 2007; SUP, 2006).

Ex-ante/ex-post questionnaires can be a highly useful source of data. They allow us to 'picture' the before and after of the game session(s) in order to analyse changes in players' perceptions, knowledge, relationships with other players etc.

The design, completion and analysis of questionnaires can be time consuming, so always design a questionnaire with a specific objective in mind (you can refer to the tables of items to observe on pages 25-30 of the manual). In the list of sample questions below, only questions related to learning/collective action/perceptions/use of the game have been selected. Other questions may be asked, for example to find out which other participants should play the game or to collect additional data on the participants themselves.

It is not always necessary to do both ex-ante/ex-post questionnaires. In some cases (e.g. due to time constraints) the ex-post questionnaire may be sufficient.

Give preference to closed questions (check boxes) and limit the number of open-ended questions to two or three. If necessary, you can always supplement your questionnaire with targeted, semi-open-ended surveys or interviews with former players to explore certain points in greater depth. The standard questions listed below can also be used as an interview grid.

Remember to adapt the questionnaire format to the respondents. For example, in cases of high levels of illiteracy, use symbols, ask questions orally with freehand answers, use moving assessments (where participants position themselves on an axis drawn on the ground according to their level of appreciation). Each of these methods has advantages and disadvantages that must be taken into account: for example, voting by show of hands or moving evaluations do not preserve anonymity.

Methodology for producing this list of questions

In January 2016, a request was sent to the ComMod association forum to share the ex-ante-ex-post evaluation questionnaires used by ComMod process organisers. **Thirteen researchers** answered the call and shared their questionnaires. This list was compiled by **Nicolas Becu** on the basis of the answers provided.

Note: (Before/After) indicates that the question is asked before AND after the session. If there is no indication on the before, the after indicates that the question is asked AFTER the session.

General

- Was it useful?
- What aspects could be dealt with in this game for future use?
- (Before/After) What are your expectations? Did the session meet your expectations?

About the game tool

- Was it easy to understand?
- Was it fun?
- Was it realistic?

Suggestions for making the game more realistic

- Is there a difference between the game and reality on such and such an aspect?
- What improvements would you make to the game?

Individual decisions

- What was your decision in the game about X, and why?

Scenarios

- Do you think scenario X is realistic or feasible?
- Can you suggest other scenarios?

About the approach and organisation

- Was the way of working during the session effective?
- Was the way of working motivating?
- How well did the facilitator facilitate the discussion?

Learning

- What did you learn from the game?
- What have you learned about (a specific issue of the problem)?

- (Before/After) How do you think such an aspect works (an aspect addressed by the game and on which learning is expected)?
- (Before/After) In your opinion, what are the important elements of the state of the system under consideration?
- (Before/After) In your opinion, what processes are responsible for the state of the system under consideration?
- (Before/After) What indicators do you need to assess the important elements of the system under consideration?

Learning about others

- Were you able to exchange with others and understand them better?
- What did you learn about other participants (their actions, their thoughts)?
- Did you know/see the actions used by other players during the game? If so, did they surprise you and why?
- What did you learn about the rules that govern each other's actions?
- Do you think this session changed your understanding of social relationships within this system?
- What have you learned about interactions with others?
- Do you think this session changed the views of other participants?

Learning about the physical system

- What did you learn about the system represented?
- Do you think this session changed your view of how the system physically works?

Learning about the collective goal

- (Before/After) In your opinion, what are the most important aspects to be taken into account to achieve the common goal and why? (You can eventually sort them out)

The effects of learning

- Did the game lead you to react differently from usual with regard to aspect X?
- Do you think the game has changed your opinion of the situation?
- Do you think this session will change your daily actions?
- Do you think this session has improved your ability to participate in group actions?
- Did it give you new ideas for the future?

Collective action

Social interaction

- What is your opinion of your relationship with participant X?
- What blockages have you had with participant X, and do you think this can happen in reality?
- Do you think that the game may have helped you to remove the blockages you have with participant X?
- Do you think that the game helped to improve your relationship with participant X?
- Do you think there was a lot of controversy among the participants?
- Did you have a say in the group?
- Do you think others understood your point of view?
- (Before/After) Which of the following types of relationships do you think you made (I/ did you make) with other participants? Collaboration/Competition/Negotiation/Avoidance/Accommodation?
- (Before/After) Which of the following methods of social interaction do you plan to use (I/have you used) during the game: Listening to others/Explaining to others/Thinking alone/Acting/Observing?

Collective decisions

- Do you think that the game helped you to think collectively?
- In your opinion, what were the milestones of the participatory moments?
- Did you agree with the collective choice made?
- Did you participate in the collective decisions and at what level?
- Do you think that your opinion was taken into account in the collective decisions?
- (Before/After) What objective do you think you followed (I/did you follow) for this game?
- (Before/After) What do you think are the most critical elements for successful negotiation? Following the session, did you feel that aspect X was important for the success of the negotiation?
- (Before/After) In your opinion, what are the factors for the success of the negotiation? Were the challenges of the situation resolved during the game?

ComMod Association

A group of researchers and professors from CIRAD, CNRS, INRAE, IRD and French and international universities has developed and formalised an original way of modelling to support collective decision-making processes regarding the sustainable management of renewable natural resources.” teacher-researchers from CIRAD, CNRS, INRAE, IRD and French and international universities has developed and formalised an original way of approaching **modelling in support of collective decision-making processes regarding the sustainable management of renewable natural resources**. This group, named ComMod (Companion Modelling), has become an **association of practitioners**.

The main purpose of ComMod is to design, analyse, develop and promote scientific research and its application in the field of **Companion Modelling**, including its main methods and tools, i.e. role-playing games, multi-agent modelling and social simulation.

The **companion process** aims to help different stakeholders gradually get to know each other, and to share their arguments and points of view in order to build a shared vision of a problem and to construct together an accepted solution.



ComMod Association
11 Place Adolphe Chérioux
75015 Paris
France
www.commod.org

CIRAD
Avenue Agropolis
34398 Montpellier Cedex 5
France
www.cirad.fr



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